NON-PUBLIC?: N
ACCESSION #: 9111070008
LICENSEE EVENT REPORT (LER)

FACILITY NAME: Joseph M. Farley Nuclear Plant - Unit 1 PAGE: 1 OF 3

DOCKET NUMBER: 05000348

TITLE: Manual Reactor Trip Due To Unexpected Governor Valve Closure
EVENT DATE: 10/03/91 LER #: 91-010-00 REPORT DATE: 11/01/91

OTHER FACILITIES INVOLVED: DOCKET NO: 05000

OPERATING MODE: 1 POWER LEVEL: 100

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR SECTION:
50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:
NAME: D. N. Morey, General Manager - TELEPHONE: (205) 899-5156
Nuclear Plant

COMPONENT FAILURE DESCRIPTION:
CAUSE: B SYSTEM: JJ COMPONENT: TA MANUFACTURER: W120
REPORTABLE NPRDS: Y

SUPPLEMENTAL REPORT EXPECTED: No

ABSTRACT:

At 0606 on 10-03-91, while operating at 100 percent power, the operators manually tripped the reactor in accordance with FNP-1-AOP-13, "Loss of Main Feedwater."

The sequence of events resulting in the manual reactor trip began with the main turbine control system's unexpected automatic closure of the main turbine governor valves. The operators responded by placing the main turbine digital electro-hydraulic control system (DEHC) in "Turbine Manual" which stopped the governor valves' closure at 15 percent open. The ensuing plant transient resulted in both steam generator feed pumps (SGFPs) tripping on low suction pressure.

This event was caused by a degraded DC voltage output from the primary Operator Auto Controller (OAC) power supply in the main turbine DEHC syst

m and a failure of the circuitry which should have transferred the power supply. This degraded voltage resulted in a change of several control parameter values within the primary OAC prior to its complete failure. These degraded control parameters were passed to the back-up OAC which resulted in continued governor valve closure until the system was placed in manual by the operators.

The degraded power supply was replaced and the primary OAC programming was reloaded. A DEH Task Force is continuing the investigation of this failure and will evaluate corrective action to prevent recurrence.

END OF ABSTRACT

Plant and System Identification

Westinghouse - Pressurized Water Reactor
Energy Industry Identification System codes are identified in the text as XX!.

Summary of Event

At 0606 on 10-03-91, with the unit operating at 100 percent power, the operators manually tripped the reactor in accordance with FNP-1-AOP-13, "Loss of Main Feedwater."

The sequence of events resulting in the manual reactor trip began with the turbine control system's unexpected automatic closure of the main turbine governor valves. The initial response by the operators was to place the main turbine DEHC JJ! in "Turbine Manual" which stopped the governor valves' closure at 15 percent open. The load rejection caused the steam generator levels to decrease which caused both SGFPs to increase speed to approximately 5200 rpm. Shortly thereafter, both SGFPs tripped on low suction pressure. Due to the loss of main feedwater, the operators manually tripped the reactor in accordance with FNP-1-AOP-13, "Loss of Main Feedwater."

Description of Event

On 10-03-91, with the unit operating at 100 percent power, the main turbine governor valves unexpectedly began closing. The on-shift crew's initial response was to place the main turbine DEHC panel to "Turbine Manual." This action stopped the governor valve closure at approximately 15 percent open on all four governor valves. The load rejection caused the steam generator levels to decrease which caused both SGFPs to

increase speed to approximately 5200 rpm. Shortly thereafter, both SGFPs tripped on low suction pressure. The on-shift crew responded to the loss of main feedwater by tripping the reactor in accordance with FNP-1-AOP-13, "Loss of Main Feedwater."

Following the trip, the operators implemented FNP-1-EEP-0, (Reactor Trip or Safety Injection) and FNP-1-ESP-0.1 (Reactor Trip Response) ensuring that the unit was safely in Mode 3.

The unit was returned to power operation at 0657 on 10-04-91.

Cause of Event

This event was caused by a degraded DC voltage output from the primary OAC power supply in the main turbine DEHC system and a failure of the circuitry which should have transferred the power supply. This degraded voltage resulted in a change of several control parameter values within the primary OAC prior to its complete failure. These degraded control parameters were passed to the back-up OAC which resulted in continued governor valve closure until the system was placed in manual by the operators.

The OAC power supply contains circuitry which should have prevented the primary OAC controller from operating in the degraded logic state. It was concluded that this circuitry failed to perform its design function because either it failed independently, it was a contributor to the power supply failure, the internal actuation setpoint was improperly established at the power supply vendor facility, or the setpoint drifted low with operation.

Reportability Analysis and Safety Assessment

This event is reportable because of the actuation of the Reactor Protection System. After the trip, the following safety systems operated as designed:

- main feedwater was isolated by automatic closure of the flow control and bypass valves,
- auxiliary feedwater pumps started automatically and provided flow to the steam generators,
- source range nuclear detectors energized automatically,
- pressurizer heaters and spray valves operated automatically as required to maintain system pressure.

There was no effect on the health and safety of the public.

Corrective Action

The degraded power supply was replaced and the primary OAC programming was reloaded. A DEHC Task Force is continuing the investigation into this failure and will evaluate corrective action to prevent recurrence.

Additional Information

The unit was returned to power operation at 0657 on 10-04-91.

Description Part Number Location

Multibus Power Supply 1D54582G01 DEHC Operator Auto Controller Cabinet

This event would not have been more severe if it had occurred under different operating conditions.

The following LER involved a reactor trip due to the main turbine DEHC system's unexpected automatic closure of the main turbine governor valves due to internal power supply failures: LER 89-012, Unit 2.

ATTACHMENT 1 TO 9111070008 PAGE 1 OF 1

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W. G. Hairston, III
Senior Vice President
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the southern electric system
10 CFR 50.73
November 1, 1991

Docket No. 50-348

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555

Joseph M. Farley Nuclear Plant - Unit 1
Licensee Event Report No. LER 91-010-00

Gentlemen:

Joseph M. Farley Nuclear Plant, Unit 1, Licensee Event Report No. LER 91-010-00 is being submitted in accordance with 10 CFR 50.73. If you have any questions, please advise.

Respectfully submitted,

W. G. Hairston, III

WGH, III/BHW:map 1300

Enclosure

cc: Mr. S. D. Ebneter
Mr. G. F. Maxwell

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